

Question 2. *For each coal-fired generating unit at this facility where the heat input, steam flow, or generating capacity increased from the original design, provide the dates such increases occurred and the projects (including a short project description) occurred associated with such increases.*

Original Commercial Rating Unit 1 - June 1986, Unit 2 - May 1987

According to the "IPP Project Design Manual," both units were designed to operate at 820 MW gross generation. It was noted during the start-up of Unit 1 that there was extra capacity so both units started commercial operation with a rating of 840 MW gross generation. From commencement of operation until May, 2002, there was no increase in the physical capacity of the units, but over time the rating of the units was changed as more information became available.

July, 1995

In July, 1995, IGS adopted a rating schedule that varied the output seasonally. The Summer months were defined as June through September while the winter months included the remaining months of the year. The new seasonal ratings were as follows:

	<u>Winter</u>	<u>Summer</u>
Unit 1	865 MW gross	855 MW gross
Unit 2	865 MW gross	855 MW gross

No modifications were required for these ratings.

October, 1996

In October, 1996, IGS changed the capability ratings for both units as follows:

	<u>Winter</u>	<u>Summer</u>
Unit 1	875 MW gross	865 MW gross
Unit 2	875 MW gross	865 MW gross

No modifications were required for these ratings.

June, 2000

In June, 2000, IGS changed to the following year-round generation ratings :

Unit 1	875 MW gross
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Unit 2 875 MW gross

No modifications were required for these ratings.

May, 2002

Unit 2's capacity rating was increased to 900 MW gross on May 24, 2002. The following projects were completed on Unit 2 at this time:

1. HP Turbine Dense Pack: Installed Alstom Dense pack in high pressure turbine to improve section efficiency.
2. Circulating Water Makeup Bypass: Replaced the 12" bypass line around the circulating water makeup control valves with a 16" line. New pump motors and variable-frequency drives were also installed. This allows the plant to keep up with cooling tower makeup demand even when the makeup lines are scaled.
3. Boiler Safety Relief Capacity: Converted one of the electromatic relief valves on the main steam line to a mechanical relief valve.
4. Isolated Phase Bus Duct Cooling: Installed cooling fans on the isolated phase bus duct to maintain design temperature rise on the conductor and the enclosure.
5. Boiler Feed Pump Re-rate: Made changes to one boiler-feed pump as a test to see if the pump efficiency could be improved by volute assembly changes.

May, 2003

Unit 1's capacity rating was increased to 950 MW gross on June 1, 2003. The following projects were completed on Unit 1 at this time:

1. Turbine Dense Pack: Installed Alstom Dense pack in high pressure turbine to improve section efficiency..
2. Enlarge Circulating Water Makeup Bypass: Replaced the 12" bypass line around the circulating water makeup control valves with a 16" line. New pump motors and variable-frequency drives were also installed. This allowed the plant to keep up with cooling tower makeup demand even when the makeup lines are scaled.
3. Boiler Safety Relief Capacity: Converted one of the electromatic relief valves on the main steam line to a mechanical relief valve.

4. Isolated Phase Bus Duct Cooling: Installed cooling fans on the isolated phase bus duct to maintain design temperature rise on the conductor and the enclosure.
5. Boiler Feed Pump Re-rate: Replaced both Unit 1 boiler-feed pump volute assemblies to improve pump efficiency.
6. Helper Cooling Tower: Installed a new fiberglass helper tower east of the existing concrete towers.
7. Generator Step-Up Transformer Cooling: Installed new coolers with more fan capacity.
8. Generator Monitoring & Cooling: Provided additional generator monitoring and improved control of the existing cooling system, including a new field winding monitor, pyrolysate detector system, stator leak monitoring system and controller for the stator cooling water system.
9. Boiler: Added an 8-foot extension to the platen pendant superheater elements to provide more superheater surface area. Also made minor changes to drum internals to redistribute internal flow.

May, 2004

Unit 2's capacity rating was increased to 950 MW gross on April 27, 2004. The following projects were completed on Unit 2 to facilitate at this time:

1. Helper Cooling Tower: Installed a new fiberglass helper tower east of the existing concrete towers.
2. Generator Step-Up Transformer Cooling: Installed new coolers with more fan capacity.
3. Generator Monitoring & Cooling: Provided additional generator monitoring and improved control of the existing cooling system, including a new field winding monitor, pyrolysate detector system, stator leak monitoring system and controller for the stator cooling water system.
4. Boiler: Added a 4-foot extension to the platen pendant superheater elements to provide more superheater surface area. Also made minor changes to drum internals to redistribute internal flow
5. Boiler Feed Pump Re-rate: Changed boiler-feed pump volute on to improve

pump efficiency on Boiler Feed Pump 2FWA-P-1A.

This response was prepared by IPSC employee Jerry Hintze with assistance from Dean Wood and Aaron Nissen.